

Narrative Review

Psychophysiological Well-Being & Quality of Life (QoL) among breast cancer patients after mastectomy.

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Abstract

Breast Cancer is the most common lethal malignancy affecting the quality of female lives globally, eliciting great distress in all aspects of life, i.e., physically, mentally, psychologically, psychophysiological, etc. This review aims to demonstrate the factors impacting breast cancer patients' psychophysiological well-being and QoL after mastectomy. Human studies focusing on factors demonstrating the after-effect of mastectomy on the psychophysiological well-being and QoL among breast cancer patients were reviewed. The studies reviewed to describe the effects of mastectomy on breast cancer patients and the aftermaths of the treatment on the psychological as well as psychophysiological well-being and their QoL through different means and methods. Moreover, this review highlights the factors affecting the resiliency of breast cancer patients. The literature is briefly reviewed and includes highlights of the psychophysiological well-being and changes in QoL and an exploration of the relationship among the study variables and patients with breast cancer after mastectomy and the way they opt to improve their QoL. Although mastectomy is considered beneficial complementary therapy for women with breast cancer, it still highly affects the individual's mental and physical health. It is observed that to improve the QoL and enhance psychological and physiological well-being, breast cancer patients need to have ways to resilient themselves. The factors that help patients to achieve post-traumatic growth (PTG) and resilience include therapies, lifestyle changes, and support and care.

Keywords

Breast Cancer, Mastectomy, Quality of Life (QoL), Psychophysiological factors, Well-being.



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Introduction

Breast cancer is the most common cancer, affecting more female lives than any other type of cancer globally¹. In South Asia, Pakistani women tend to develop a higher grade level of this disease at an early age². All around the world, this disease's progression rate has declined significantly on average; however, in developing countries, the results contradict². Since this cancer is perceived as a chronic disease, the quality of life (QoL) of the patients surviving this cancer has become the major area of interest for the researchers³. Mastectomy is the increasingly used strategy for the treatment of breast cancer. Women at high risk of breast cancer are suggested with mostly three options: surveillance, chemoprevention, and prophylactic mastectomy⁴. A breast cancer patient may undergo a mastectomy due to certain indications. These indications for mastectomy include any family history of breast cancer, any previous breast biopsies, physical examination with unreliable results because of nodular breasts, or due to mastodynia, dense breast tissues on mammography, and cancerphobia^{5,6}. Moreover, the surgical removal of both breasts through bilateral mastectomy to prevent breast cancer is seen to reduce the incidence of breast cancer and increase the survival rate of women with a high risk of breast cancer⁷.

Short-term and long-term effects of Mastectomy on Quality of Life

Although mastectomy has now been used for treating breast cancer for decades, little is still known regarding the short-term and long-term effects of this procedure on the patient life. However, recent researchers are now interested in mastectomy as a method of preventing breast cancer from understanding the genetic basis of breast cancer⁷. Factors including the effect of the procedure on the QoL and psychosocial adjustment are of great importance in this regard⁸. Mastectomy with radiotherapy is often considered a feasible option for treating women with early-

stage cancer. Factors discussed earlier are based on the treatment decision made by the patient⁸.

Studies are now focusing on women's emotional and psychological responses to the surgery and its effects on the well-being and QoL of the patients. Various alterations have been observed in patients with postmastectomy, including changes in mood, body image, sexuality, femininity, and social and occupational functioning^{9,10}, suggesting that mastectomy has profound effects on the patient's body image, self-esteem and is offered to improve the QoL¹¹.

• Stress and trauma due to mastectomy

Breast cancer (BC) is a global burden and the leading cause of death in women; it not only affects the physical attribution but also disturbs the mental well-being of women and their families¹². Body shaming, psychosocial factors, fear of not being able to give birth, and other factors have a discriminatory effect on the mental health of women experiencing breast removal or mastectomy. As a result, women feel lonely, depressed, ill, anxious, and suffer from poor quality of life¹³.

Breast is considered a sexual and feminine feature, and its removal generates a perception of loss of sexuality, and feminine attributes, which leads to stress, depression, and post-traumatic stress disorder (PTSD) in patients. Examination of post-operative pain and post-traumatic effect in breast cancer survivors after mastectomy reveals that about 72% of patients suffered from PTSD^{14,15}.

• Psychophysiology and psychopathology

Anxiety, depression, mood disturbances, and PTSD are frequently reported in BC patients. However, surgical removal of the breast also heightened the stressful condition and disturbed women's normal psychosocial and physiological functioning. Since breasts are considered the primary feminine features, the removal of any one or both breasts through mastectomy would generate a negative

body image and well-being, traumatizing the patient and triggering PTSD¹⁶.

Persistent stressful conditions disturb the normal functioning of the autonomic nervous system and hypothalamic-pituitary-adrenal (HPA) axis, which is responsible for coping behavior. This disturbed functioning of the HPA axis negatively impacts other body organs^{16,17}. Physiologically stressors activate the cascade of HPA axis secretions in which the paraventricular nucleus (PVN) of the hypothalamus release corticotrophin-releasing factor (CRF) that stimulates the secretion of adrenocorticotrophic hormone (ACTH), which then triggers the adrenal gland (AG) to increase the blood cortisol level¹⁸. To cope with a stressful situation, fight and flight responses are generated by elevating Epinephrine and Non-epinephrine hormones through Arginine vasopressin (AVP) and Cortisol functioning¹⁹. Atrophy of pyramidal neurons of the CA3 region of the hippocampus and Dehydroepiandrosterone (DHEA) downregulation can be the pathological cause of HPA axis disturbance, which could elicit psychological disturbances and disease²⁰⁻²³. On the other hand, cortisol disturbance in chronic stress could be the pathological variant to developed BC, as cortisol influences estrogen regulation, which is a breast tumorigenesis factor²⁴.

Women after mastectomy experience a wide range of emotional and physical disturbances, and depression is one of them. The HPA axis disturbance, specifically corticotrophin-releasing hormone (CRH) neuropeptide disturbance in an individual, is involved in developing depressive symptomatology²⁵. In Western countries, after mastectomy, about 1% to 56% of women experience depression²⁶, and due to shyness and unwillingness to express emotions, most of the depressive symptoms are undertreated^{27,28} which could lead to poor quality of life and hence reduce the treatment efficacy. However, depression and other psychological disturbances can improve through different therapies and treatments²⁹. A Follow-up study on depressive symptomatology after mastectomy in young and middle-aged women reported a high prevalence of depression

in young and aged women up to three years. After four years, there is no significant difference in depressive symptoms in mastectomy and non-mastectomy patients^{30,31}.

PTSD symptoms are most frequently related to early stage diagnosis, gender, low socioeconomic status, poor social support, and coping behavior in cancer patients³². Prevalence of disease range up to 32.3% in breast cancer patients, and the most reported symptoms are intrusion due to poor psychological well-being and avoidance due to poor physical health. Moreover, these symptoms persist after two years of diagnosis in patient^{33,34}. The altered functioning of the stress response system could be the pathophysiological cause of the disorder and hence would eventually affect the patient's QoL and decrease the treatment efficacy. Studies reported that PTSD altered immune activity by decreasing natural killer cells and increasing inflammatory markers, which propagate cancer and shorten the life period³⁵.

• **Body Image of Women After Mastectomy**

Body image is considered a social characteristic of one's body and a perceptual representation of physical appearance, function, health, and sexuality. Changes in body appearance in women would generate negative body image and cause numerous psychological issues, hence in women following mastectomy have hitches such as appearance dissatisfaction, loss of body legitimacy and feminine features, hesitant to look at their own body, feeling less sexually attractive, conscious about appearance, and being unsatisfied with surgical scars³⁶. Such treatment methods affect mental stability and can lead to hopelessness, alteration in body admiration, causing different mood disorders (frustration, fear, and resentment), reversion of illness, and eventually death³⁷.

Studies show that the loss of breasts would significantly affect women's hope, body esteem, and emotional state. Hence, the physical dysfunctionality affecting self-body esteem is the main concern. Mastectomy leads to negative body assessment and feeling of being less attractive, which causes the individual to compare their

present body looks with their previous ideal body^{38,39}. Unsatisfaction with the body expressions, especially breasts, modify many aspects of life, including psychological well-being, self-resiliency, optimism, identity realization, success, and physical nature. For all social, physical, and psychological demands of life, the body's internal equilibrium is necessary, built by both physical and mental health. If the equilibrium is not established, problems will occur, which could be the reason for the development of emotional strain and lead to psychological distress like agitation, reluctance, unhappiness, and incompetence⁴⁰. Those who underwent breast removal surgeries usually have a negative perception of the body, change their way of dressing or go through breast reconstruction surgery, or have a high level of anxiety and depression and low sexual activity and interest^{41,42}.

- **Biopsychosocial functioning of women after mastectomy**

The loss of feminine, maternal, and sexual features in breast cancer patients is suggested as a highly traumatic experience. This trauma affects the functioning and re-evaluation of the patient's life and functioning⁴³. The mortality and morbidity parallel curves suggest slow and poor improvement in cancer curability. This situation points out the necessity of mammography screening on a large scale⁴⁴. Since it is seen that the complexity of the treatment and rehabilitation process significantly impedes the QoL of the patients, therefore, measurable actions should be taken to spread awareness in women of all ages with risk factors of breast cancer⁴⁴. Women after mastectomy faced health-related QoL issues suggesting that this cancer and its treatment affect not only physical and emotional functioning but also the patient's cognitive and social functioning of the patient⁴⁵.

The life comfort of the women after mastectomy is affected. Since they get aggressive during and after the treatment, even though the treatment successfully prevents the disease growth⁴⁶, this suggests that women, regardless of their socioeconomic status, needed emotional support after mastectomy. Studies suggest that women

participating in meetups and clubs specifically associated with women after mastectomy display better psychosocial adaptation to life, increased self-acceptance, and increased confidence in performing social roles in the family and outside⁴⁴.

- **Mechanisms of psychological resiliency in women after mastectomy**

Women who underwent a mastectomy after breast cancer prognosis suffered from psychological distress and having concerned with their body appearance; however, the thoughts and perceptions of a person depend on the person's emotional state principally on psychological resiliency⁴⁷. Psychological resiliency is an adaptation or coping mechanism in response to stressful or traumatic conditions flexibly and creatively, overcome with negative thoughts/perceptions and provoking positive feelings, which build up as a result of environmental, psychosocial, and internal support⁴⁸. Flexibility/self-control over the situation and positive emotions are the two components of resilience that help a person cope better and speed up the recovery of patients^{49,50}. Psychological resiliency is an automated process composed of cognitive, psychological, and behavioral rudiments, which include positive thoughts, prevalence, personal competence, efficiency, focus on a new task, and finding a possible way to cope with a situation. Social and individual support are the key sources in the resilience mechanism, specifically supportive social networks and a person's tendency to develop positive thoughts and detach herself from the negative emotions of the incident. Psychological resilience in cancer patients is related to disease acceptance and coping with negative emotions; hence higher the resiliency, the better the post-traumatic growth; however individual and his/her surroundings impact the resiliency^{51,52}.

Factors inducing/promoting resiliency

Breast cancer is the most prevalent among all kinds of cancer in women globally. Studies have shown that with the advancement of screening and treatment, the breast cancer survival rate is increasing, due to which a major shift in research has been seen toward the quality of life and mental health of the survivors^{53,54}. Studies in the past

concluded that the whole phase that starts from diagnosis to treatment could generate a series of traumatic events. This trauma can then generate emotional distress, anxiety, and fear. These responses of breast cancer patients are suggested to persist beyond any treatment^{55,56}. Studies suggest that patients deal differently with these responses using different coping strategies. It is seen that some patients react well by maintaining good psychological status and QoL to address the disease optimistically, while some face negative feelings to the same coping strategy. This suggests that resilience is active in the patient's adaptive behaviors⁵⁷. Resilience is suggested to be an individual's capacity to maintain healthy physical and mental states in extreme situations⁵⁸. It depends on the patients and their surroundings which coping strategies may promote resiliency. It might be possible that their resilience may get promoted through therapies, interventions, changes in lifestyle, or support from their family and friends.

Therapies

Focusing on positive adaptation and protective factors in traumatic events, tend to treat resilience as an interactive dynamic construct rather than focusing on the risk factors⁵⁹. Evidence suggests that traumatic events not balanced by resilience factors eventually cause maladjustment. In this regard, most psychologists believe that resilience in cancer patients can be promoted by training them under specific circumstances⁶⁰. However, there are limited studies on resilience in breast cancer. Patients. Therefore, researchers now try to verify the relationship between factors affecting patients' resilience. It is now evident that psychological and behavioral variables have a profound effect on individual health. For cancer patients, it is suggested that stress-related psychosocial factors are associated with an increased incidence of cancer in healthy individuals and poorer survival in patients diagnosed with cancer or due to higher mortality rate⁶¹. It is suggested that the psychological factor of the physically ill individual is mostly associated with predicting or promoting resilience and may affect their self-esteem, self-efficacy, internal locus of

control, optimism, hardness, hope, self-empowerment, acceptance of illness, and determination⁶².

Several studies have shown the profound effect of rehabilitation and interventional therapies in promoting resilience in breast cancer patients. A Chinese study demonstrates that hope for rehabilitation, including factors of prior health status and better early treatment outcomes, helps to promote resilience in breast cancer patients in China. Moreover, it is also suggested that the course of chemotherapy during the clinical stages of cancer is a predictor of resilience among breast cancer patients⁶³. An RCT confirms that breast cancer patients are receiving psychological intervention to help in reducing the risk of breast cancer recurrence. Moreover, the results also conclude that these effects were observed above and beyond the contribution of known predictors (status of lymph node, receptor, histology, etc.) of disease progression in breast cancer⁶⁴. One more study suggests that individuals with breast cancer who receive psychological group intervention therapy tend to have promoted coping skills related to psychological strength. Patients significantly showed increased cognitive well-being, happiness, emotional intelligence, optimism, resilience, and self-esteem compared to those who did not receive any psychological therapy⁶⁵.

Lifestyle changes

It is seen that many cancer patients who get diagnosed and undergoes treatment face extremely stressful experience, rendering them vulnerable to long-lasting negative psychological and QoL outcomes. These psychological outcomes can be depression, distress, anxiety, sleep problem (insomnia), fatigue, or impaired QoL⁶⁶. Limited inconsistent data shows an association between sociodemographic factors and lifestyle changes and resilience in cancer patients. Studies revealed that better resilience outcomes had been seen in younger cancer patients with higher levels of education and income⁶⁷. Results of studies suggest that marital and socioeconomic status on resilience in breast cancer patients has ambiguous results

with no consistent associations⁶⁹. Few authors have assumed that resilience weakens with age due to the accumulation of risks and adversities, physical and cognitive decline, and personal resources⁶⁸.

Support and Care

It is suggested that being diagnosed with breast cancer and undergoing mastectomy and chemotherapy can induce a lot of stress and experience various mental health issues, including depression, anxiety, etc⁶⁹. Over the years, it has been documented that every individual can protect him/her mental health when dealing with life crises and adversities like breast cancer⁷⁰. While coping with breast cancer, resilience can be a valuable resource that includes multidimensional processes, including other natural interactions of attribute⁷¹. One of the resilience theories, named Walsh's family resilience theory, suggests that families can play a major role in fostering resilient outcomes in an individual facing changes or crises. It is suggested that family resilience has a direct and indirect effect on the QoL and is suggested to be positively associated with post-traumatic growth (PTG) of breast cancer survivors. Moreover, the PTG of the survivor has a positive relation to their QoL⁷². Besides family support, social support also helps establish a social interaction that begins with communication and is suggested to create an empathic relationship leading to the patient's safety. Social support can be in many forms, including giving a realization of self-confidence, a sense of belonging to a group, enhancing an individual's ability, or enhancing an individual competence behavior. Communication helps patients cope with the situation they are stuck in and realize ice and relieve feelings in themselves⁷³.

Factors suppress/eliminate resiliency.

Studies have shown a correlation between resilience factors and QoL and social performance, suggesting a reverse correlation between QoL with anxiety and depression. Reported evidence suggests that high resilience patients have lower anxiety and depression and higher physical, emotional and social performance resulting in higher QoL compared to low resilience patients⁷⁴. It is said that cancer patients have low resilience as compared to other diseases since they are

subjected to various stressful situations, including cancer diagnosis and risk of recurrence. These stressful situations tend to suppress resilience in breast cancer patients⁷⁵. Similarly, depression, metastasis, recurrence, fear of survival, and various treatments along with its symptoms and management of disease act as the psychological risk factors in generating stress and anxiety, significantly affecting the resilience of a patient⁷⁶. One of the main factors that are highly relatable to the growth of resilience in breast cancer patients is support from the family. It is suggested that the longer the period for the cancer treatment is, the more support from the family decreases. This shows that as the treatment progresses, the degree of support from the family perceived by the patient gets lower⁷⁷. Another factor that contributes to suppressing resiliency among breast cancer patients is their level of education. Studies have shown that patients with education above school graduation had higher resilience than those whose educational level is below middle school⁷⁸.

Conclusion

Although mastectomy is considered beneficial complementary therapy for women with breast cancer, it still highly effects the individual mental as well as physical health. It is observed that breast cancer patients, to improve their QoL and to enhance their psychological as well as physiological well-being, uses various type of interventions, including self-awareness intervention or primary surgery. HoOUver, not all ways to deal with the disease stress improve the QoL. Moreover, exercise is suggested to be a beneficial way to enhance the psychophysiological well-being and QoL of breast cancer patients.

Conflicts of Interest

The Authors declare no conflicts of interests.

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